



File Code: 3420

Date: October 5, 2007

Subject: Prairie Knolls Forest Health Project

To: District Ranger, Williams RD, Kaibab NF

On September 27, 2007, I visited the Williams Ranger District, Kaibab NF, at the request of Mark Herron to discuss and evaluate a potential forest health project on the District. I describe in this report what bark beetle activity was observed in this area, general existing stand conditions, and make recommendations to minimize future bark beetle impacts.

### ***Prairie Knolls Forest Health Project***

The District is proposing to non-commercially thin approximately 300 acres within the larger Government Environmental Assessment. The objectives of the project are to 1) reduce risk of bark beetle infestation, 2) increase tree vigor and growth, and 3) reduce risk of catastrophic crown fire on the Forest and adjacent private property.

The general prescription includes thinning from below to 12 – 14 inches diameter at breast height (dbh) with 25 to 30 foot spacing between residual trees. On lands adjacent to private property, slash will be machine or hand piled; while on the remaining areas to be treated, slash will be lop-and-scattered to 2 feet.

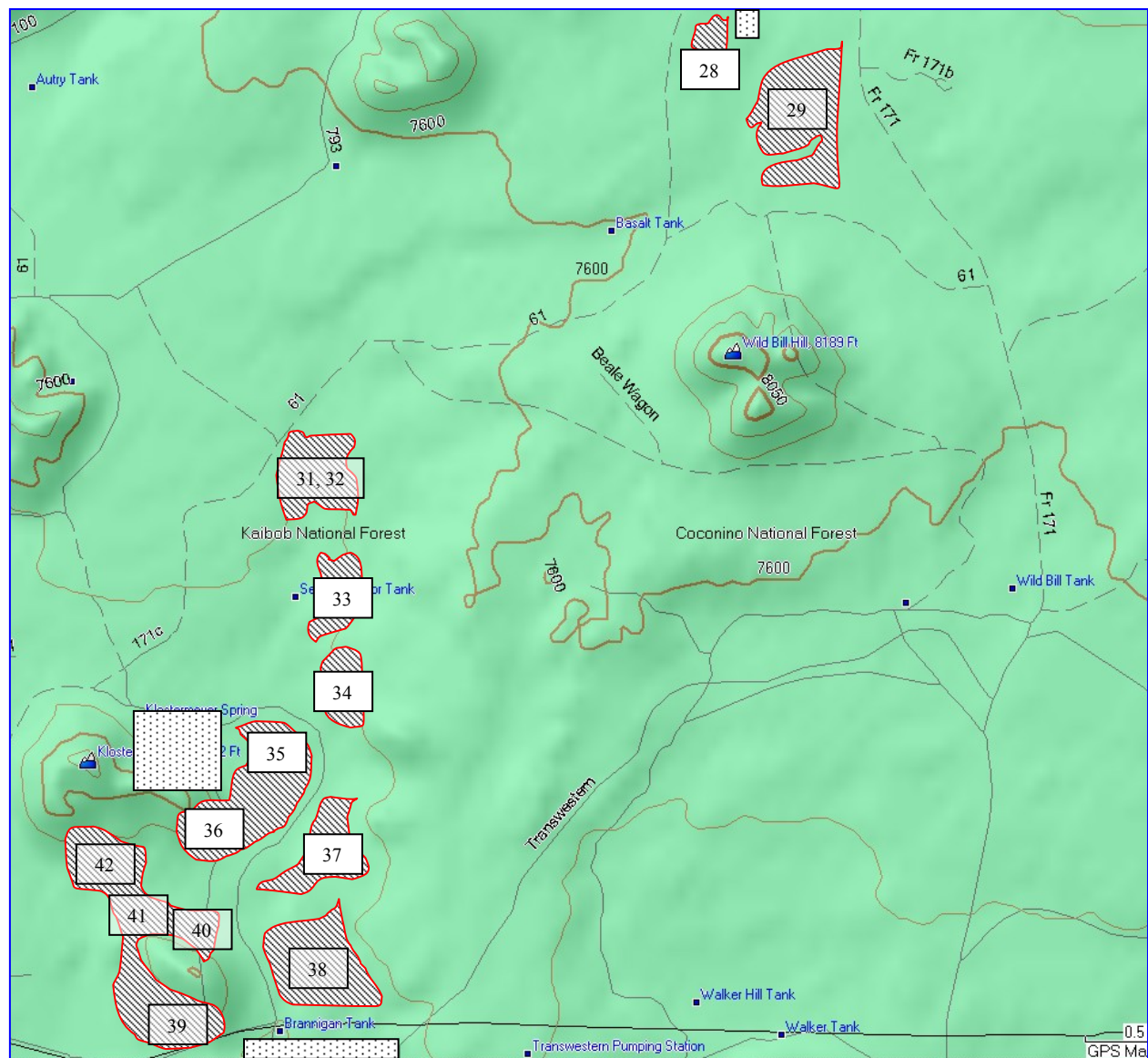
Based on a walk through survey of units 35 – 38, the stands to be treated are dominated by dense, second growth ponderosa pine less than 14 inches dbh. There are also a few pockets of more open-grown yellow pines. Low to moderate levels of dwarf mistletoe infection were observed in some areas as well. Bark beetle activity was currently low within the stands surveyed, but there was evidence of higher levels of activity during the 2002-2003 outbreak.

### ***Recommendations***

The proposed project area for non-commercial thinning treatments will help to reduce the overall susceptibility of stands to bark beetle attack in the long term as well as improve overall tree vigor, lessen risk of catastrophic wildfire, and improve vegetative species diversity. If limited funding is available, units adjacent to private property should receive the higher priority for treatment. The proposed project areas are covered by Government EA.

High stand densities reduce both individual tree and stand vigor and therefore increases stand susceptibility to mortality from bark beetles (Fettig et al. 2007). Over the past several years the Kaibab NF has seen high levels of ponderosa pine mortality. Competition from smaller trees for water has also greatly increased the mortality risk of scattered large yellow pine. In addition, continuous interlocking crowns and well-developed fuels ladders leaves vegetation on these sites at a high risk of loss from catastrophic wildfire.





**Figure 1.** Approximate location of stands (hatched polygons and unit numbers) to be treated in the Prairie Knolls Forest Health Project on the Williams RD. Private lands are indicated by stippled boxes.

Thinning from below has been experimentally demonstrated to increase the resistance level of the residual mature pine overstory (Feeney et al. 1998, Kolb et al. 2007). However, thinning slash may pose a short-term risk to residual trees in the thinning units or surrounding areas depending on the timing of thinning, local population of pine engraver beetles, and site and environmental factors such as site quality and precipitation (Fettig et al. 2007). Careful monitoring of beetle populations associated with these thinning projects should be implemented. Parker (1991) provides guidelines for minimizing pine engraver beetle impacts associated with thinning treatments, such as thinning during periods of bark beetle flight inactivity.

Requests for Forest Health Protection prevention/suppression funds should be submitted no later than October 12, 2007. If you have any questions regarding this assessment of current bark

beetle activity within the proposed project areas or with the recommendations, please contact Joel McMillin at (928) 556-2074.

/s/ Joel D. McMillin

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### **References Cited**

- Feeney, S.R., T.E. Kolb, M.R. Wagner, and W.W. Covington. 1998. Influence of thinning and burning restoration treatments on pre-settlement ponderosa pines at the Gus Pearson Natural Area. *Canadian Journal of Forest Research* 28: 1295–1306.
- Fettig, C.J., K.D. Klepzig, R.F. Billings, A.S. Munson, T.E. Nebeker, J.F. Negron, and J.T. Nowak. 2007. The effectiveness of vegetation management practices for prevention and control of bark beetle infestations in coniferous forests of the western and southern United States. *Forest Ecology and Management* 238: 24–53.
- Kolb, T.E., J.K. Agree, P.Z. Fulé, N.G. McDowell, K. Pearson, A. Sala, and R.H. Waring. 2007. Perpetuating old ponderosa pine. *Forest Ecology and Management* 249: 141–157.
- Parker, D.L. 1991. Integrated pest management guide: Arizona five-spined Ips, *Ips lecontei* Swaine, and Pine engraver, *Ips pini* (Say), in ponderosa pine. USDA Forest Service, Southwestern Region, R-3, 91-8. 17 p.